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10/823,178	04/13/2004	Jeffrey A. Hudson	03RE098/YOD REEL:0047	3713

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EXAMINER
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VERBITSKY, GAIL KAPLAN

ART UNIT	PAPER NUMBER
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2859

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/823,178

Applicant(s)

HUDSON, JEFFREY A.

Examiner

Gail Verbitsky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 13-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 13-22 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election without traverse of Invention I, claims 1-12 in the reply filed on April 19, 2005 is hereby acknowledged. Claims 13-22 have been canceled by Applicant.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In this case, the claim language is confusing because, A) it is not clear from the claims what particular input signal (claim 1) and measurement signal (claim 6) the resistive element receives and what particular output signal the resistive element produces. What does it measure? Perhaps applicant should insert –from said windings—after “input signal” in line 5 of claim 1 and after “measurement signal” in line 3 of claim 6.

Claim 7: the claim language is confusing because in claim 6, which claim 7 is dependent on, applicant does not positively claim occurrence of partial discharge, as stated in claim 7. As opposed, in claim 6, applicant states that the voltage is applied below the stress level that would cause the partial discharge. Therefore, it appears from the claim language that applicant attempts to avoid the partial discharge.

B) Also, claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: it is not clear how the resistive element is structurally related to the rest of the device and how it receives an input signal. Is the resistive element located/ inserted between the windings or remotely receives a signal from the between windings? Also, it is not clear how, being completely insulated, the resistive element, receives a signal that is a function of temperature. In addition, perhaps applicant should explain in the claims what insulation applicant means, thermal or electrical. Clarification is required.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matlock et al. (U.S. 20040263342) [hereinafter Matlock] in view of Weiler (U.S. Re 31685) and Gramsamer et al. (U.S. 20040091017) [hereinafter Gramsamer].

Matlock discloses in Fig. 3 a device in the field of applicant's endeavor comprising an electrical machine winding, inherently, having a conductor at least partially surrounded by a winding insulation. A winding temperature sensor 24c can be a resistance element (RTD) monitors the winding condition, and thus, winding insulation

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condition (paragraph [0042]), by measuring its temperature (resistance corresponding to temperature) and provides a warning of a degrading trend or electrical condition (paragraph [0043]). This would imply that the sensor 24c is configured to receive an input signal from the winding insulation and provide an output signal corresponding to the winding insulation condition. Matlock also states that the resistance sensor has an insulation (paragraph [0041]).

Matlock does not explicitly teach the particular capacitance per unit relationship between the resistance insulation and the winding insulation, as stated in claim 1, with the remaining limitations of claim 2.

Weiler discloses a device in the field of applicant's endeavor wherein a temperature sensing resistive element is embedded in an insulation (adhesive coated Mylar tape) 12.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Matlock, so as to add an insulation system to insulate the resistive element from the winding, as taught by Beihoff, in order to protect the device from unexpected short circuit, and thus, failure, due to the electrically conductive resistive element.

For claim 1: the use of the particular materials, i.e., of the particular capacitance (equal to each other), as stated in claim 1, for the insulation systems, absent any criticality, is only considered to be the "optimum" materials that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found . obvious to provide for the insulation material disclosed by Matlock since it has been

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held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416. Also, it is very well known in the art that the same materials have the same per unit capacitance. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make both the insulation systems of the same (capacitance) material, in order to provide both the systems with the same materials and thus, insulation quality, and also to minimize the manufacturing costs by choosing the same insulating material.

For claim 2: the use of the particular material, i.e., of the particular dielectric constants, as stated in claim 2, for the insulation systems, absent any criticality, is only considered to be the "optimum" material that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the insulation materials disclosed by Matlock since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416.

Matlock does not explicitly teach that the detector is completely encased by insulation, as stated in claim 1.

Gramsamer discloses a device in the field of applicant's endeavor wherein; a temperature-sensing resistor (thermistor) 15 is completely embedded in insulation 16.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Matlock, so as to completely encase the detector into insulation system/ material, as taught by Gramsamer, so as to avoid any possible short circuit and thus, damage to the detector.

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6. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al. (U.S. 5019760) [hereinafter Chu] in view of Beihoff et al. (U.S. 4683515) [hereinafter Beihoff].

Chu discloses a device in the field of applicant's endeavor. Chu states that it is very well known in the art (col. 1) that temperature of an electrical winding is measured by a resistive element (RTD) embedded in the winding. Chu discloses in Figs. 2-3 a temperature sensor (thermistor/ resistive element) 33 placed next to a winding 30 with a winding insulation 43. A current (input signal) is passed through the sensor 34. The voltage across (output signal) leads 38, 39 provides indication of temperature of the winding insulation. Chu states that the electrical insulation prevents shorting across the winding or to adjacent the winding (col. 3, lines 35-37). This would imply, that a thinning of the insulation, voids (air voids) in the insulation and low dielectric properties of the insulation would cause a short circuit.

Chu does not explicitly teach that the resistor element has an insulation, and the particular relationship between the resistor insulation and the winding insulation, as stated in claim 1, with the remaining limitations of claim 2.

Beihoff discloses in Figs. 1, 17 a device in the field of applicant's endeavor wherein a temperature measuring thermistor is embedded (completely) in a thermal-electrical insulation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Chu, so as to add an insulation system to insulate the resistive element from the winding, as taught by

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Beihoff, in order to protect the device from unexpected should circuit, and thus, failure, due to the electrically conductive resistive element.

For claim 1: the use of the particular material, i.e., of the particular capacitance (equal capacitance, as stated in claim 1, for the insulation systems, absent any criticality, is only considered to be the "optimum" material that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the insulation material disclosed by Chu since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416. Also, it is very well known in the art that the same materials have the same per unit capacitance. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make both the insulation systems of the same (capacitance) material, in order to provide both the systems with the same materials and thus, insulation quality, and also to minimize the manufacturing costs by choosing the same insulating material.

For claim 2: the use of the particular material, i.e., of the particular dielectric constants, as stated in claim 2, for the insulation systems, absent any criticality, is only considered to be the "optimum" material that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the insulation materials disclosed by Chu since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a



known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416.

7. Claims 6, 8, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matlock in view of Gramsamer et al. (U.S. 20040091017) [hereinafter Gramsamer].

Matlock discloses in Fig. 3 a device in the field of applicant's endeavor comprising an electrical machine winding, inherently, having a conductor at least partially surrounded by a winding insulation. A winding temperature sensor 24c can be a resistance element (RTD) monitors the winding condition, and thus, winding insulation condition (paragraph [0042]), by measuring its temperature (resistance corresponding to temperature) and provides a warning of a degrading trend or electrical condition (paragraph [0043]). This would imply that the sensor 24c is configured to receive an input signal from the winding insulation and provide an output signal corresponding to the winding insulation condition. Matlock also states that the resistance sensor has an insulation (paragraph [0041]). It is inherent that both, the sensor insulation and the winding insulation have dielectric constants. It is inherent, that the sensor insulation has some capacitance. It is also inherent, that, it is desirable for the operator to chose a material for the sensor with such a capacitance that it can withstand a sufficient voltage stress due to any defects, air voids, caused by overtemperature, or low dielectric constants, so as to avoid a short circuit and thus, damage to the windings.

Matlock does not explicitly teach that the detector is completely encased by insulation, as stated in claim 6, and the limitations of claim 9.

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For claim 9: the use of the particular material, i.e., of the particular dielectric constants, as stated in claim 2, for the insulation systems, absent any criticality, is only considered to be the "optimum" material that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the insulation materials disclosed by Matlock since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416.

Gramsamer discloses a device in the field of applicant's endeavor wherein; a temperature-sensing resistor (thermistor) 15 is completely embedded in insulation 16.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Matlock, so as to completely encase the detector into insulation system/ material, as taught by Gramsamer, so as to avoid any possible short circuit and thus, damage to the detector.

8. Claim 7 (as best understood by the Examiner) is rejected under 35 U.S.C. 103(a) as being unpatentable over Matlock and Gramsamer as applied to claims 6, 8-9 above, and further in view of Lanoe et al. (U.S. 4751488) [hereinafter Lanoe] {or Tanigaki et al. (U.S. 4547769) [hereinafter Tanigaki]}.

Matlock and Gramsamer disclose the device as stated above in paragraph 7.

They do not explicitly state that the partial discharge follows the Paschen's Law, as stated in claim 7.

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With respect to claim 7: it is very well known in the art that when the insulation is degrading electrically, and air gaps (voids) develop between solid pieces of the insulation, the insulation is subject to partial discharge in the air voids at a breakdown voltage that follows by Paschen's Law. See for example, Lanoe et al. (U.S. 4751488) (col. 1, lines 20-38) {or Tanigaki et al. (U.S. 4547769) (abstract and col. 2, lines 25-34)}.

***Allowable Subject Matter***

9. Claims 3-5, 10-12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gail Verbitsky whose telephone number is 571/ 272-2253. The examiner can normally be reached on 7:30 to 4:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571/ 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GKV

Gail Verbitsky

Primary Patent Examiner, TC 2800



July 29, 2005